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METHODS OF REVISION AND THE REVISION OF A HIGH SCHOOL CURRICULUM

By MILDRED ENGLISH
Assistant Superintendent, Raleigh Public Schools

THE PROGRAM OF public high schools is in a period of transition, according to studies made by different experts[1] in the field of secondary education. New curriculums are appearing in relatively rapid succession and old curriculums are disappearing. Obviously some new form of secondary education is in the making. This phase of the situation is encouraging. However, there is much confusion and perplexity in the minds of those who are determining its policy; many realize that the present program is not functioning effectively; but they do not see, clearly, the next steps.

Different communities are attacking the problem in different ways. Hundreds of school systems are facing the need of revising the curriculum, and are asking:

1. How shall a program of revision be organized and carried on so that the best possible course of study may result?
2. How may the teachers be stimulated to take an active part in the revision and to coöperate in trying it out or making it work in the class room?
3. How may we determine whether it is better than the course we now have? That is, how may we measure the results?

SOURCES OF LEADERSHIP

There is need for expert guidance in every program of curriculum revision. Examples of current practice as reported in the Fourth Yearbook of the Department of Superintendence, 1926, show that in some instances this expert guidance comes from within the school system; at other times, from without.

[1] Counts, Geo. S.: The Senior High School Curriculum, The University of Chicago Press, Chicago. Sixth Yearbook, Department of Superintendence—the Development of the High School Curriculum. Progressive Education—Problems of the Progressive Secondary School. Progressive Education, Oct.-Nov.-Dec., 1928.

Experts from the State Department of Education, from the state teachers colleges and from the state university may act as advisers. The superintendent of schools or the supervisor may direct the work of curriculum construction in any particular system. In the high schools the heads of the different departments, aided by the director of research, may have charge of the program.

Many systems have employed outside experts to direct the work, to check on what has been done by the various committees from the teaching staff, and to criticise and make suggestions in their respective fields.

Raleigh Plan

Believing that if the teachers are to be in sympathy with the program and ready and willing to try the course in the class room they must have a share in the work, the superintendent of schools of Raleigh Township planned for the work to be done by the teaching staff.

It takes time for a program to be developed by the staff while they are doing full-time teaching. Realizing the value of having the material tried out in the class room with careful testing, checking and constant revision in the light of results obtained, it was agreed by both administrators and teaching staff that the program should be carried on over a period of ten or twelve years. Thus a sound basis may be secured for stating that the results obtained with the revised course of study are better than those obtained under the old course.

The program is now in its sixth year and the results in both pupil and teacher growth have been very satisfying.

Organization

In undertaking the program, a steering committee was organized to direct and act as a clearing house for the various committees. This committee is composed of Dr. Thos. Alexander, Teachers College, Columbia University; Dr. M. R. Trabue, University of North Carolina, Chapel Hill; Dr. Shelton Phelps, and Miss Lucy Gage, Peabody College, Nashville, Tennessee; and the superintendent and assistant superintendent of the Raleigh schools.

The members of the committee have kept in close personal touch with the situation and have at all times worked as members of a committee or group attacking any definite problem.

The first year the problem of curriculum construction and the need for the revision of the Raleigh course were discussed with a few

teachers, the principals, department heads, and other key people in the system to enlist their active interest in the experiment.

A survey of the field of curriculum revision was made during the second year, by interested teachers, under the direction of the steering committee.

During this organization period experts and subject-matter specialists were brought in to discuss with the teaching staff certain definite phases of the curriculum. This policy has been continued during the entire time. Not only have these men and women lectured to the staff, but they have met committees of teachers and discussed definite problems that are constantly arising. They have helped in the evaluation of the work as it has been developed and in checking the results obtained.

EXPERTS WHO HAVE ASSISTED IN THE RALEIGH PROGRAM

Teachers College, Columbia University; Dr. Thos. Alexander; Dr. Frank McMurry; Dr. Lois C. Mossman; Mr. Jas. S. Tippett; Dr. Laura Zirbes; Dr. Gerald S. Craig.

Peabody College for Teachers; Dr. Shelton Phelps; Dr. S. C. Garrison; Miss Lucy Gage; Dr. Chas. McMurry.

Chicago University; Dr. Chas. H. Judd; Miss Agnes Rice.

University of Iowa; Dr. Ernest Horne.

University of North Carolina; Dr. M. R. Trabue.

North Carolina State College; Dr. K. C. Garrison.

Duke University; Dr. John W. Carr, Jr.; Dr. Karl Zener.

Use has been made from time to time of research studies carried on by bureaus of research in school systems, colleges and universities.

The third year of the program was given to wide reading on the part of the staff to set up objectives for the educational program of the system, in the different subjects of the course, and for the different grades. A professional library was started with this phase of the work and has been added to from year to year as the need for books and helps on different subjects has arisen. This library is used by the teachers of the entire staff and has proved helpful not only with the curriculum program, but with the general work in the schools.

In the work of setting up objectives the teachers volunteered for committee work on the subject in which they were most interested. The committees were composed of teachers from the elementary, junior and senior high schools, as the need for a continuous program from first grade through high school was recognized by all. The fact was recognized, also, that a good high school cannot be built on

a poor elementary school course, and it was therefore felt that different levels of school work should be represented on each committee.

The committees organized with a chairman elected by the group. Often sub-groups were organized from the committee to make some special investigation. In this way individual problems were taken care of and reported to the committee as a whole. The work of the committees has been an after-school contribution to the program of curriculum revision, as no teachers have been relieved from classroom duties to do this work.

In the fourth year subject-matter committees were organized following the plan of committee organization explained above. These committees developed in each school subject objectives, subject-matter requirements, correlations, materials and methods to be used, and possible outcomes.

The following year integrating committees were formed to take all subject-matter reports for a given grade and see that there were no omissions or over-lappings, and that the entire program for any given grade had unity and coherence.

More progress has been made in the elementary school than in the high school, due, in part, to the fact that the work in the high school is so highly departmentalized. A "Visualized High School Program" has been worked out by the staff on a large board which coordinates the different years and the various departments of the high school. The scheme shows the courses offered in the high school by years and by semesters, as well as by topics within each year. Each teacher was asked to turn in to the chairman of the committee in charge of this work the major topics in the course as taught the present year. These topics were placed on cards which were hung on the board in the proper column showing the year and the department in which the topic was taught. The use of cards of different colors shows the correlations between departments and the articulation of the topics taught.

The chairman of the committee working on this often found it necessary to call in the members of a department to explain difficulties and statements that appeared contradictory. At times it was necessary to call in the members of two or more departments to make needed adjustments. The board is not in any sense a fixed scheme. A topic can be changed from one year to another or from one department to another by simply moving the card. Correlations with different departments are indicated by placing under the card showing the topic a card of the color of the department offering the same topic or the department that should offer the topic. As the board

has been filled with the cards from the different departments this year, showing topics now being taught, changes that the departments wish to have made have been indicated. In this way it is hoped that the course may eventually be so planned that the topic shall be taught first where it is needed and before it is needed by other departments. For example, the science department should give some facts to the students who are to take home economics before the need for these facts is felt in the home economics department, and so on.

This visualized program shows the units now being offered in the high school. Committees are considering the type of high school program that should be offered and plans are being made to try out some different units of work in the high school next year with the students in the first two years.

We believe that when a child finishes high school he should be acquainted with the general fields of culture—his mother tongue, mathematics and other tool subjects, social studies, foreign languages, health, the fine arts, recreation, vocation, and science. A high school program that does not provide for these is weak.

The thesis has been developed with the high school staff that the program should come from within the school; that it should be the program of the teachers; that the principal is acting as *ex officio* member of the group. With this point of view the teachers are studying the child and his needs and trying to develop a program in the high school that will fit the student for citizenship of the highest type.

Results

It has not been the purpose of those working on the Raleigh Curriculum Program to develop a *new* course of study, but to check the one we now have and will have when the program is completed against other good courses of study. Very careful records are being kept of each pupil from the first grade through the high school. When the children now entering school for the first time have completed high school we shall have a very accurate record of the growth of the individual pupil under the new program to check against the results obtained under the old course of study.

The program of curriculum revision now being carried on has brought about a better spirit among the members of the staff, has stimulated professional growth on the part of all concerned with the program, has helped develop an atmosphere in the classrooms that makes for happy pupils who seek opportunities for self-expression along many lines.

The different departments in the high school are coöperating more than ever. It is no uncommon thing for the teacher of the science or art department to take the home economics class, or the foreign language teacher to help the science class with articles from foreign journals or papers, and so on.

At commencement last year the Creative English class gave a play written by one of the group. The art department painted the scenery and made the posters for advertising the play. The class in journalism handled the publicity. The science class took care of the lighting of the stage. The home economics class designed and made the costumes. The music department arranged the musical part of the program.

In the past the work of the high school has been very highly departmentalized. It is a good omen when departments can forget departmental lines and merge with other departments in developing a program for the school which considers, first, the boy and the girl, instead of the subject.

ANNUAL HIGH SCHOOL WEEK

Two hundred high schools have enrolled in the High School Debating Union of North Carolina for the State-wide high school debating contest this spring on the query: "Resolved, That the United States should join the World Court."

The triangular debates will be held throughout the State on April 5, and the final contest for the Aycock Memorial Cup will be held at the University on April 18 and 19.

The Washington Collegiate Institute of Washington was the winner of the Aycock Cup in the contest of 1928.

The final contest of the High School Debating Union for the Aycock Cup, together with the annual interscholastic track meet and tennis tournament, will make up the program of activities for High School Week at the University this spring.

All indications point to a very successful high school debating contest and to very lively competition for the Aycock Cup.

*TEACHING HISTORY BY UNITS**

By A. K. KING,
University of North Carolina

IN THE MARCH ISSUE of this magazine the plan followed in organizing history around teachable units was discussed. This plan contemplates a definite method of presentation in which the emphasis is placed on mastery of a minimal essential of facts necessary for an understanding of a unit; hence, the method is called the *"mastery technique"*. An examination of this technique will reveal that it consists of five steps which resemble closely the Herbartian method.

Exploration is the first step in teaching a unit. The first period is spent in informal questioning and discussion on the new unit. The pupils have had no assignment to prepare outside of the classroom: consequently, their answers are based on past experience entirely, in other words, on what they have learned in previous courses or what they remember from books, newspapers, magazines, moving pictures, speeches and many other sources.

This period reveals a wide range of information on the part of some pupils, almost total ignorance on the part of others, and frequently a host of prejudices and misconceptions on the part of all. Usually such knowledge as they possess is episodical, impressionistic, and unorganized. On being asked, "What was the French Revolution?", one pupil answered that "It was a time when a lot of people got their heads cut off!" Another was more specific and suggested that it was "The time when the Duchess du Berry was guillotined." He had seen a movie on this period recently. Still another pupil thought the American Revolution caused the French Revolution and that the French were following the lead of the Americans. The latter was gathered from an Armistice day speech. On another occasion a boy was asked, "Who was Garibaldi?" and he immediately launched forth on such an extended discussion of "Garibaldi and the Thousand" that he had to be stopped by the instructor.

According to Hill,[1] "The work in exploration serves two main purposes. It indicates to the teacher the foundation on which he must build, and it arouses among the pupils an interest in the new topic. It thus motivates the work and at the same time promotes economy in education by avoiding the reteaching of what is already known."

Presentation is the second step in the mastery technique. In a short

* Concluded from the March Number.
[1] In Morrison, H. C., and others, "Studies in Secondary Education I," *Supplementary Educational Monographs*, no. 24. University of Chicago, p. 109.

introductory lecture the teacher sketches the whole unit in a bold outline, bringing out the forces which have produced the main theme of the unit, a running narrative of its development, and finally its historical significance. This overview should necessarily be brief, from twenty to thirty minutes; consequently, the material must be selected with considerable care and organized so that it can be grasped readily.

The pupils make no preparation for the overview, nor are they permitted to take notes during the presentation. An understanding of what they will be studying in the next step rather than a memorization of facts is sought. After the presentation the pupils are given an opportunity to ask questions, and if it has been given with enough skill to arouse interest a lively discussion usually ensues.

To reveal whether they have mastered the presentation the pupils next prepare a paper based on the teacher's overview, showing their understanding of it. A grasp of the meaning and organization of the unit is emphasized rather than an exhibition of rote memory. With pupils who are not accustomed to this method the results are likely to be discouraging at first. However, as soon as they learn how to study by the mastery technique the quality of the presentation papers improves. Those pupils whose papers do not show sufficient mastery of the overview are given another presentation which should take into consideration the weaknesses of the first one and attempt to remedy them. They then write a second presentation paper. Most of the pupils will pass after the second trial; however, there will be a few who will occasionally have to rewrite their papers a third or even a fourth time. In accordance with the mastery idea no pupil is permitted to proceed to the next step until he has successfully passed this exercise. This is in itself a powerful motivating factor.

As soon as a pupil has demonstrated his mastery of this step he is allowed to proceed to the next without waiting for the entire group. The chief objects in giving the presentation are, first, to prepare him for his real study of the unit which follows; and, second, to further arouse and stimulate interest which was begun in the exploration. These first two steps then should have served to orient the pupil and motivate his work in the unit.

Assimilation is the third step in teaching a unit. At this point the active study of the unit begins. During the preceding steps no assignment has been made. Now the classroom becomes a laboratory in which each pupil is busily engaged studying the topic under the direction of the teacher.

Mimeographed copies of the minimal essentials, supplementary

projects, specific references and assimilation guide sheets are distributed among the pupils and explained.[2] Considerable care should be exercised by the teacher in clarifying the minimal essentials and evaluating the references. He should also explain carefully the work that must be done in assimilating the unit and indicate the work that can be done for extra credit. In addition the pupils should be given some directions for beginning their study of the unit.

During the assimilative period the pupils are engaged in reading the references, taking notes, making outlines, writing papers, studying the problems and questions given in the guide sheets, making maps or charts, and performing any other activities necessary for assimilating and understanding the unit. The reference books and other materials necessary for efficient work are in the room, and the pupils are encouraged to utilize their time efficiently. A minimum of home work is required and that is usually in the form of extensive reading.

The teacher is engaged in directing the learning of his pupils. Individual pupils encounter difficulties for the solution of which they need the aid of the teacher. Many pupils need the guidance of the teacher in overcoming bad study habits. He should also watch the reading of his pupils and as far as possible direct each to the books most adapted to his interests and ability. Part of his time is spent in going over notes, outlines and papers with individual pupils and pointing out ways of improving their work. It is doubtless apparent that much of the success of this method of teaching depends on the ability, energy and initiative of the teacher. He must know his pupils individually and give a fair proportion of his time to each.

Each pupil is allowed to advance at his own rate. Some complete the assimilation of the minimal essential considerably in advance of others. These are allowed to work on a supplementary project, either of their own choice or one suggested in the guide sheet. In this way it is possible to make the course much richer for the brighter pupils.

Some of the assimilation period is spent in group study, but there is no place for formal reciting as yet. Occasionally problems will cause the entire group difficulty and will need to be cleared up by group discussion. Reports on individual projects are given from time to time and debates are held when a good question comes up. The teacher will need to do some questioning and give tests frequently to ascertain the progress of the pupils and to determine the degree of mastery they have attained.

[2] See the last issue of the *High School Journal*, pp. 90-97.

Organization is the fourth step in the mastery technique. After the pupils have reached the mastery level in the assimilation of the minimal essentials they next prepare an organization outline of the entire unit. During this period they are not allowed to obtain aid from any source. If a pupil is unable to prepare a fairly complete and systematic outline it is evident that he has not mastered the unit and that further study will be necessary.

This is perhaps the most searching test with which the pupil is confronted during a unit. It tests not only his knowledge of facts but his ability to arrange them in their proper relationship. To do the latter requires keen analytical ability. There is usually a wide range in the quality of these organization papers; consequently, the teacher must set up a minimum standard of attainment, and this should be mastery of the minimal essentials.

With respect to the value of this step Hills says,[3] "It is open to question whether there is any other exercise or device which is so effective in bringing home to pupils, first, the significance of a topic as a whole; second, an appreciation of the distinct phases of a historical movement and their relation to one another; third, an ability to discriminate between points of major consequence and those which are of relatively minor importance; and, fourth, a realization of the vital importance of being able to put one's information on a given topic in a well ordered and logical form. A systematic organization paper indicates mental power of no mean order."

Recitation is the final step in the mastery technique. If one has mastered a topic and understands it thoroughly he should be able to tell it to others either orally or in writing. This step gives the pupils further opportunity to use what they have learned. Through a series of floor talks by pupils the topics in the minimal esssentials are presented in succession. It is usually necessary to limit the time alloted to each talk to five or ten minutes to prevent some pupils from monopolizing the recitation. Each pupil is required to use clear, fluent, coherent English as far as possible. This gives the pupils valuable training in expression which is impossible in a general discussion or question-and-answer recitation.

After each floor talk members of the class are given an opportunity to challenge the statements made by the pupil who presented the topic and to offer pertinent corrections. In some cases it is advisable to have a topic presented a second time by some other member of the class. The pupils are so thoroughly prepared by the mastery plan that the recitation could be carried on for a considerable period;

[3] Morrison and others, *op. cit.*, p. 112.

however, they should be encouraged to condense their material and stay on the subject by using their organization outlines. As soon as the teacher is satisfied that the pupils have had sufficient opportunity for self-expression on a unit it is time to introduce a new one.

The question naturally arises, "How much *time* should be allotted to each unit?" It is not feasible to fix a time limit for the separate units since the same amount of emphasis is not accorded each and because of other variables. It is desirable, however, not to allow much over a month for one due to the fact that pupils seem to tire of a unit if it is too long. On an average the time distribution will be something like the following, assuming a period of forty-eight to fifty-three minutes each day: exploration, one day; presentation and overview paper, two days; assimilation, sixteen days; organization, one day; and recitation, three days.

Some of the *difficulties* encountered in initiating this method of teaching should be pointed out. First, teachers in general do not understand the mastery idea. Unless a teacher is sympathetic with the philosophy back of the mastery technique and unless he is willing to exercise the patience necessary to instill the idea in his pupils the method will be little more than formal supervised study.

Second, pupils are not accustomed to learning history this way, especially if they are in the habit of reciting daily.[4] New study habits have to be formed and the ideal of mastery constantly kept before them. Most of all it requires a change in attitude toward school work; a change which is expressed in the difference between thoroughness and thoughtlessness or intellectual honesty and the "getting-by" attitude. To obtain the maximum results pupils should be trained in this method of studying at an early age.

Third, many schools do not have the facilities. Unless a school has the necessary equipment in the way of books, maps, and classroom furnishings to provide a suitable work-shop for the pupils some other method will be better.

Finally, there are administrative difficulties such as the length of the period, the organization of the library, and the teaching load, which make the procedure described above impracticable.

[4] The writer tried this method with a class of high school seniors who felt that they were deprived of their rights because they could not spend the whole hour reciting.

*THE RELATION OF CHEMISTRY TO HEALTH AND DISEASE**

By HENRY E. BIGGS, JR., '28
Greensboro High School, Greensboro, N. C.

DISEASE STILL STANDS barrier to the fullest realization of human happiness; it is today a gaunt, drear figure whose menacing shadow bears both a chill and a challenge. This scourge presses a relentless struggle, a struggle which has been marked by a slow but certain retreat toward ultimate oblivion, the idealistic goal set by the determined ranks of science. It is a silent and deadly combat; and the massed forces of the scientific world, the chemists, the physicists, the biologists, and the bio-chemists, are necessary for progress which will lead to complete success.

From among the ranks of science, chemistry has been an ever present factor, the most important of the allied sciences, in this constant battle to reduce human suffering and prolong the span of human life; and by reason of the nature of its past triumphs, few blows will be struck without its aid. Chemistry has delved more minutely than the biologists' microscope.

Chemistry has discovered nature's most guarded secrets, analyzed the findings, and reproduced with hardly less perfection the treasures of its research. Only after years of dismay and fruitless effort was the importance of chemistry to scientific progress realized and the cooperation of chemists solicited. It was only after Harvey's wonderful discovery of the circulation of the blood that the combined efforts of chemists and physicians were concentrated, in a limited sort of way, against disease. Nevertheless it can truly be said that this event led the way to a series of triumphs. Lister, after grasping the great conception of circulation, studied the process and reactions of blood poisoning, which study would have been long retarded had it not been for his knowledge of analytical chemistry. The work of Louis Pasteur was a triumph of applied chemistry, and his tests were those which only a chemist with a thorough knowledge of the science could apply. With the impetus of these achievements analytic and constructive chemistry were permanently fixed in the realm of medical research.

Constructive chemistry has three major objectives: first, to prepare specific medicants for the cure or alleviation of specific diseases; second, to isolate, study, and, if need be, to artificially prepare pure

* Winning essay in the North Carolina Academy of Science High School Prize for the year 1928.

organic principles of fundamental importance to life, secretions of the body organs of which a deficiency or an excess would cause disease; and third, to achieve a complete ultimate analysis of the constituents of the body cells, of the components of the blood and the tissues, together with a complete ultimate analysis of the components of foods, so that complete knowledge of the body in health and what it needs to preserve its health may be established.

The chemists' efforts to realize these goals have created a new and growing industry, the manufacture of synthetic drugs. As early as 1832 anaesthetic chloroform was made by Liebig by means of the action of bleaching powder on alcohol. Later acetone was used in its manufacture. Then numbers of other anaesthetics were perfected which were far less dangerous: ether, ethyl chloride, and novocaine, a derivative of coal-tar benzine. Chloral was the first hypnotic to be produced commercially; but because of its dangerous possibilities others have been developed including veronal, and the inter-related compounds, sulphonal, trional, and tetronal. In 1887 antifebrine was discovered, the first of a series of synthetic antipyreties, which has entered into competition with the natural alkaloid quinine, and through the manufacture of adrenaline "bloodless surgery" has been effected. Adrenaline is an active principle of the supra-renal gland; and, when injected subentaneously even in excessively small amounts, it produces so violent a contraction of the arteries that the blood is driven away from the infected tissues. It was first isolated in 1901 from the suprarenal glands of sheep and oxen and required a thousand pounds of tissue from twenty thousand oxen to make a pound. It is now sold in synthetic form as suprarenine. Numbers of other drugs have been thus perfected through chemical research. It is a profitable field of service, with a future. "The manufacture of synthetic drugs, anaesthetics, hypnotics, antipryeties and drugs for the treatment of specific diseases has developed, in the past thirty years, into an industry of great importance."

Along lines of preventative medicine, in the matter of anti-toxins much is being accomplished, especially in an effort to reduce the danger of their use. There is, at the present time, a known antitoxin for pneumonia bacilii, which has been found to kill pneumoniacoccus bacilii in viro, but is poisonous, even deadly, to the human system. These poisons, often quite alien to the pure antitoxin, are in many cases by-products or animal fluids, absolutely valueless as a part of the defensive toxin. "Scientists have been able to show that extracts of certain bacteria may produce sensitivity reactions, and that the taking of such bacteria into the body results in

severe attacks. Obviously, the next step—and scientific studies have already been published along this line—is to determine the exact chemical substances responsible, and to work with fixed substances rather than extracts of unknown composition." Indeed, the isolation of such harmful substances has already been successfully accomplished.

The underlying chemical causes for goiter, acromegaly, dwarfism, gigantism, gout, and diabetes are still to be definitely ascertained. Insulin has been found to cure diabetes; and it is not unreasonable to predict, since all life is bio-chemical, that all these maladies from the simpliest to the deadly may be effectually and permanently checked.

The foes of health are both numerous and powerful. They ask no quarter, neither are they respectors of persons. Tuberculosis, pneumonia, and cancer have yet to be successfully controlled. The causes of pernicous anemia; of lymphatic leukemia, a disease characterized by a persistent increase of white blood cells; of Hodgkins disease, in which white blood cells increase and tumors of lymph glands form; of hemaphelia, in which there is a tendency to bleed and in which the blood fails to coagulate properly, are not yet known. Paralysis in its various forms and certain of the more serious forms of insanity have not as yet yielded their secrets to medical science. Each of these diseases may have at its basis serious chemical complications that only bio-chemistry allied with the other sciences can solve.

Problems of public health, the supply of pure water, the inspection of foods, "policing" of the dope traffic, would be problems, indeed, bereft of chemistry just as medicine without it would be an uncertain art, and surgical science mere butchery.

But still the great potentialities of pathological and physiological chemistry have hardly been tapped. The combined task of the biologist, the physicist, and the chemist in the struggle to prolong and protect life has just begun. The work of these three types of scientists is so different, yet so akin, related as they are to the problems of disease, that only when they are working together toward the goal will the utmost progress be realized. They are interdependent and will be always. Divided, the ghastly skeleton of disease plods on unchecked; united, his henchmen fall one by one before the sure thrusts of science.

Today chemistry stands at the threshhold of a new era of service; beyond are unlimited possibilities. The magnitude of its program is a challenge. There is a line for every specialist to study, an enemy for every expert to confront and conquer. Progress is necessarily slow and will continue to be retarded by limited equipment and re-

sources. In order to give his best the chemist must be free of the shackles which bind him to the explored fields of research, the rut trail, the established. Chemistry must continue its victorious march. The resources of the world, the health and happiness of humanity are at stake. It is time to mass forces against a common foe in bitter chemical warfare to the death.

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WILMINGTON HIGH BASKETBALL CHAMPIONS

The New Hanover high school has won the State high school basketball championship for the season of 1929.

The final game for the State championship in this contest was played at Chapel Hill on March 9 between the New Hanover high school, eastern champions, and the Richard J. Reynolds high school, western champions. The New Hanover team won the game by the score of 21 to 7.

The State high school basketball contest for this season was regarded as very successful. One hundred and two high schools took part in the contest.

The New Hanover high school was also winner of the State high school basketball contest of 1928 and of the State high school football contests of 1927 and 1928.

The sixth annual meeting of the High School Athletic Association of North Carolina will be held in Room 5 of the Peabody Building at Chapel Hill at 11:00 a.m. on Saturday, May 18, 1929, according to an announcement recently made by E. R. Rankin, secretary of the association.

SOME ATTAINABLE OBJECTIVES IN THE TEACHING OF HISTORY

By W. H. DAVIS
University of North Carolina

MANY AUTHORS HAVE tried to answer the above problem by giving a long and exhaustive list of objectives; in trying to accomplish all of them, one would find himself so confused that none would be attained. I have in mind a man who is not satisfied with doing a minimum number of tasks at one time, but tries to accomplish many simultaneously. As a result he has never successfully completed any one of them, and consequently has made a failure of his work. The same principle will hold with a history teacher who tries to set up a great number of purposes for his subject; he will not be successful in engendering any. It is much better to do a few things well than it is to attempt a great number and fail to achieve any one successfully.

After making a very careful study of some of the books and articles written on this subject, I have attempted to select a short number of important purposes for teaching history. They are rather comprehensive in meaning and will include ultimately many minor ones that have been listed separately. These objectives will inevitably follow as by-products of the larger ones.

It may be well in this connection to give the conception of history upon which such objectives that will be discussed are based. Probably the most popular conception of history among present day authors is the genetic, the one which seems to be the most proper for a true understanding of history. Another word for this *term* is developmental—the idea of a continual change in conditions and institutions from "prehistoric" times to the present. "Prehistoric," in this sense, is used to represent that period before there was a written record of history, a period of from 500,000 to 600,000 years ago. We have records which indicate that man has gradually emerged from a very simple type of society, crude and primitive, to our present complex civilization.

The first aim in teaching history should be in accord with this developmental conception of civilization. The past should be made so intelligible in its true sense to pupils that it can be understood and interpreted. The pupil should be led to conceive of the past as never static, but in a stage of continual change—and that history does not repeat itself. Every fact discussed should be as free as possible from the personal opinion and prejudices of the teacher. Presenting the

past in a clear, unbiased and intelligent manner to the pupil should be always uppermost in the history teacher's mind. Facts presented in this fashion will give the pupil an opportunity to think for himself, and thereby acquire an attitude of tolerance which is so much needed in contemporary life. By such an approach to historical study, the pupil will become able to see the world as a related unit and not his own country as a world to itself.

As a direct outgrowth of a careful and unbiased study of the past comes another rather important purpose in presenting historical facts, namely, inculcating historical mindedness. One cannot be "historical-minded or inquisitive, open-minded, eager to know the truth"[1]—without knowing history and knowing it thoroughly. "The more we learn, the more we wish to learn" is an old maxim. One of the interesting things about learning a great deal about any particular subject is finding how little we do know about it. The more one learns, the more points of view he comes in contact with, and hence becomes critical in trying to obtain the truth. A student in history who has attained the first aim mentioned above is prepared to see history in a new light; to look at it from a critical viewpoint. He begins to be more inquisitive, tolerant and eager to know the truth. After such an attitude has been developed, he should be able to divorce himself from a particular text book or the books of any particular author and measure them with a judgment which has been derived from a discriminative study of history.

As concomitants of this historical attitude will come other values, such as, "to explain racial, economic, religious and social changes, thereby making for a truer democracy of feeling" or "helping to give one an elevated view point from which to observe all aspects of civilization."[2] These minor objectives form a sort of heirarchy in producing historical-mindedness. They come as concomitants of the large purpose. If sought separately, they would be confusing and hence lose their significance; but when they come as units in a great objective, they have their proper emphasis and proportional significance.

The final objective in teaching history should be the "cultivation of intellectual tastes."[3] In this age of inexhaustable reading material, it is necessary that individuals be trained in selecting the best books for the satisfaction of their intellectual hunger. There are many kinds of reading material, varying from that which is morally undesirable to that which is most beneficial in engendering the best

[1] Hill, H. C. "History for History's Sake." *Historical Outlook*, XII, 312.
[2] Davis, C. O. *A Guide to Methods and Observation in History*, p. 15.
[3] Hill, *op. cit.* p. 314.

ideals and attitudes. Historical literature is very valuable as a source of entertainment and as a means of instilling clean and healthful attitudes. Developing this love for good historical literature is intrusted to the high school teacher. A high school pupil's like or dislike for history after the course is completed depends in a large measure upon the teacher. He may teach history in such a fashion that the pupil will never wish to see another history book, or he may so handle his material that pupils will find great pleasure in reading historical literature as a means of entertainment during their leisure hours. Of all careful handling of objectives this one should receive the most attention, because pupils really learn history by reading many books other than those assigned by the instructor. If their inclination for reading has been thwarted by an incapable and unskilled teacher, they will have been deprived of an important means of entertainment and pleasure. A negative "mental set" toward history has been developed by many teachers because of an overzealous desire to accomplish this last objective. The influence of these teachers on the pupils has been worse than nil. If a teacher cannot even inculcate the former two objectives, he should by all means at least project an appreciation of intellectual values into his pupils.

In conclusion, there are three main objectives that should be attained in the teaching of history: first, to present the past to the pupil in an intelligible fashion, capable of interpretation; second, to inculcate historical-mindedness; and third, to cultivate intellectual tastes. There are other general values that will come as concomitants of these larger ones, but should not be definitely sought since they have a tendency to complicate the main purposes.

STATE CONTEST IN BASEBALL

Preparations for the State high school baseball championship contest this spring are now being made by officials of the High School Athletic Association of North Carolina.

Individual entry blanks certifying to the eligibility of players under the regulations are due to be filed with the executive committee of the association by high school principals whose teams wish to enter the contest, on or before April 20. It is expected that the opening round of games in the State contest will be played on Friday or Saturday, April 27 or 28.

The Forest City high school won the State high school baseball championship in the contest for 1928.

1927-1928 BOOKS OF WORTH AND INTEREST FOR HIGH SCHOOL STUDENTS

By Miss Nora Beust

J. T., Jr. Akeley. Macmillan. 1928. $2.25. The exploits and life of Mrs. Akeley's pet African monkey.

The Winged Horse; the story of the Poets and their Poetry. Auslander. Doubleday. 1928. $3.50. (Educ. ed. $1.50.)

Adventures in Reading. Becker. Stokes. 1927. $2.00. Vital book lists and delightful chats about reading.

Drums. Boyd. Scribner. 1928. $2.50. Johnny Fraser, a North Carolinian youth, is the hero of this tale of the Revolution.

Death Comes for the Archbishop. Cather. Knopf. 1927. $2.50. Numerous incidents with the Indians and many legends of old Mexico add to this story of life in Mexico after the Mexican war.

The Boy's Life of the Wright Brothers. Charnley. Harper. 1928. $2.00. Inventive genius plus persistence are prominent here.

Gilman at Redford. Davis. Macmillan. 1927. $2.50. The muskets of the Revolution rattle against the background of family life in colonial Massachusetts.

The Kingdom of the Mind. Downey. Macmillan. 1927. $2.00. Questions and answers that will help you to know yourself.

Heroes from Hakluyt. Finger, ed. Holt. 1928. "Of the adventures and the deeds of the Elizabethans who were born free of the whole earth."

Siberian Gold. Harper. Doubleday. 1927. $2.00. Exciting tale of a young mining engineer in Russia.

Knickerbocker's History of New York. Edited by A. C. Moore. Irving. Doubleday. 1928. $3.50. John Daugherty's droll illustrations add much to the merriment of this classic.

Trumpeter of Krakow. Kelly. Macmillan. 1928. $2.50. A story of Poland in the Middle ages that tells of the terrors of the Tartans and of a certain mysterious crystal.

Magic for Everybody. Leeming. Doubleday. 1928. $2.00. "The 250 best and newest feats of magic chosen for the ease with which they can be performed."—Subtitle.

"We". Lindbergh. Putman. 1927. $2.50. (Grosset $.75.) "The famous flier's own story of his life and his transatlantic flight together with his views on the future of aviation."—Subtitle.

Clearing Weather. Meigs. Little. 1928. $2.00. How Nicholas succeeds in building a ship and of its voyage.

Marionettes, Masks and Shadows. Mills. Doubleday. 1927. $3.50. Here are suggestions of what you may do with these forms of the drama.

Ghond, the Hunter. Mukerji. Dutton. 1928. $2.50. The adventures that befall Ghond as a hunter in the jungles of India.

Story-lives of Master Writers. Raymond. Stokes. 1927. $2.50. Inspiring lives of famous authors from Shakespeare to O. Henry.

The Third Book of Modern Verses. Rittenhouse. Houghton. 1927. $2.00. A discriminating collection of some of the best American poems since 1919.

Jinglebob. Rollins. Scribner. 1927. $2.50. "A true story of a real cowboy."—Subtitle.

The Book of Indian Crafts and Indian Lore. Salomon. Harper. 1928. $3.50. Indian customs, dances, ceremonies, and costumes.

Abe Lincoln Grows Up. Sandburg. Harcourt. 1928. $2.50. The chapters dealing with Lincoln's early life being a part of the author's two volume biography.

Elizabeth and Essex; a tragic history. Strachey. Harcourt. 1928. $3.75. Fascinating, romantic and tragic.

Boys' Life of Colonel Lawrence. Thomas. Century. 1927. $2.00. Thrilling account of Lawrence's leadership of the Arabs against the Turks.

May Alcott. Ticknor. Little. 1927. $3.00. The life of "Amy" of "Little Women" who after studying in London and Paris was an artist of fame.

ANNUAL COACHING SCHOOL

The University of North Carolina's eighth annual coaching school for high school athletic directors will be conducted at Chapel Hill from August 18 through August 31, 1929. Instruction will be given at the school in the coaching of football, basketball, baseball, track, tennis, soccer, boxing, wrestling, and in training and conditioning athletes. Further information concerning the coaching school may be obtained from E. R. Rankin, secretary, Chapel Hill.

BOOK NOTES AND REVIEWS

PLANE GEOMETRY. Joseph A. Nyberg. American Book Company. Pp. VIII+292. 1929.

This book is perhaps the most recent of the plane geometries to come from the press. There is an introductory chapter which is designed to build up in the pupil's mind proper concepts and to develop the need for the formal proof. It consists of some definitions, axioms and postulates and a large number of the simpler construction problems. The proof of the constructions is not required altho near the close of the chapter some practice is given in the use of the axioms through some algebraic work.

The book is so arranged that the teacher may easily provide for the individual differences of pupils. Pages 1-242 cover the work recommended by the National Committee on Mathematical Requirements together with additional material for drill. On subsequent pages, a short treatment of the theory of limits is given which makes the work conform to the recommendation of the College Entrance Board.

A feature of the book is the number of exercises it contains. There are over 1200 of them. After nearly every theorem there are several easy exercises to fix the theorem in mind through its application to specific problems. At the ends of the chapters there are more complete lists of problems, which will give a good review of the work of the preceding chapter and give the pupil an opportunity to test his knowledge of the subject covered. All of the exercises have been carefully chosen.

The book does not emphasize the analytic method of discovering the steps in the proof of a theorem or exercise. However, it does define it and illustrate its use. In the early part of the work the proof is given to the pupil, the reasons being given by the author. The plan of proof is usually given following the hypotheses and the statement of what is to be proved. As the pupil progresses the plan of proof and the proof are left more and more for the pupil to develop.

Very little of the history of geometry is found in this book. The author is a teacher of Mathematics in Hyde Park High School, Chicago, which makes it certain that the book is written from the high school point of view and that it has been actually tried out in the high school classroom.—H. F. M.

HEALTH ESSENTIALS. Andress, J. M., Aldinger, A. K., and Goldberger, I. H. Ginn & Co., Boston. 1928. 480 pp. $1.50.

The difficulty of teaching health topics in high school lies in stimulating pupils to action rather than to mere academic recitation, in carrying the health message beyond the classroom into home and community in a practical way. The writers of this text, in addition to presenting in a simple and straightforward way the modern health viewpoint, have gone far toward providing that necessary stimulation. The questions "for informal discussion in class and at home" seem especially pertinent.—C. E. P.

BIOLOGY EXPERIMENT SHEETS. Safir, S. R. Globe Book Company. New York.

This work-book is misnamed, in that under the name of "experiment" are included structural studies, summaries of facts learned in class discussion, and much more that is in no sense experimental. At the same time the author, by including all this, makes the excellent point that much of it may have as good justification for appearing in the notebook, on the ground of educational value, as have the experiments themselves.

All this varied material, for purposes of uniformity, is forcibly jammed into a conventional mold. We have the familiar headings, Problems, Apparatus and Materials, Method, Observation, Conclusion, which frequently prove very ill-fitting. We can hardly, for example, learn by observation of a goldfish or a geranium plant the full meaning of terms descriptive of the chief body functions. The "problems" are generally "to prove" or "to demonstrate" something, seldom to solve a question. Often the pupil is told what to observe and is given a ready-made conclusion in full; at other times, after being told what to observe, he is directed to summarize. This last has its value as an exercise, but can hardly be called a "conclusion", which, as usually interpreted, means something independently arrived at by reasoning concerning facts observed.

The best part of these sheets is the "application" section, in which questions are raised that call for a great deal more than can be found by mere thought upon the experiment. Here pupils must consult books, recall their own experiences, and, in order to gain complete understanding, relate all these things to the experiment topic. When this is considered, the fact that a formal conclusion is given to pupils outright may occasionally find justification as a means of saving time for more important thought. But one could wish that a larger number of direct questions to be settled by pure observation and consequent inference might have been given, just to make things more interesting.

Together the sheets present a peculiar, but significant, picture of the struggle between adherence to the formal notebook long demanded by some colleges as part of the entrance requirement and the tendency to make the notebook of today a more valuable document to its maker through extending its scope to include other types of class exercises. As such, Dr. Safir's work will doubtless be of interest to students of present trends in biology teaching. —C. E. P.

FUNDAMENTALS OF CHEMISTRY. Gray, C. W., Sandifur, C. W., and Hanna, H. J. Revised and enlarged edition. Houghton Mifflin Company, Boston. 1929. 650 pp. $1.80.

An improved edition of an already well-known text. New features include outline summaries of chapters, a short reference bibliography, transfer to the end of the book of calculations dealing with gas volumes, added chapters on recent important chemical developments, and a series of "Suggestions to teachers" that, besides briefly outlining the intended use of the book in the minds of the authors, give excellent advice as to putting the teaching of it into proper perspective.

The book also shows a general recasting of its substance in ways to improve its teachability; order and groupings have been frequently changed, and some chapters have been amplified or entirely rewritten. Recent work on the electron is reflected in a new chapter on the structure of matter.

The constantly increasing size of science texts as they pass through new editions is too often to be regarded as an alarming symptom. In this case, however, analysis of the two hundred added pages leads to the conviction that they are used more in clarifying and simplifying the book for use than in merely adding to the burden of facts. While the authors have indeed presented the new outstanding advances and trends of thought of chemistry, they have also been careful to recast and re-evaluate the old, in such a way as to avoid making the book encyclopedic.

A strong point of this text is the organization of the subject-matter of elementary chemistry around a few large basic principles. In this edition even more than in the earlier one these principles are brought out in clear perspective.—C. E. P.

TEST AND STUDY EXERCISES IN GENERAL SCIENCE. Giles, J. T. Laidlaw Bros. New York. 1928.

Although in the science field there are many new-type comprehensive tests available for use at the end of courses, such tests on specific units, to be given as pupils progress, are relatively few. Because these take time to design, teachers of general science will doubtless welcome this new set as an addition to their list of prepared helps.

The set consists of 64 tests, together covering the customary units of general science. These are alternately diagnostic, for use at the beginning of the unit, and mastery tests, to be given at the end. The former are in modified multiple-choice form; the latter, true-false.

The sheets are so bound in a paper cover that they can be readily detached as used. A teacher's handbook and scoring key is provided.—C. E. P.

BOOKS RECEIVED

The listing of books under this caption does not preclude more extended notice of review later. A number of them will be reviewed in subsequent issues of this publication.

WARD, ETHEL G., *Junior and Senior High School Speller.* New York, American Book Company, 1929. Pp. 128.

CHAPMAN, LUCY H., *Using English* (Illustrated by FRED G. COOPER). New York, Harcourt Brace and Company, 1929. Pp. 494+4.

NYBERG, JOSEPH A., *Plane Geometry.* New York, American Book Company, 1929. Pp. VIII+292.

SAFIR, SHELLEY R., *Biology Experiment Sheets.* New York, Globe Book Company, 1929. 90 sheets. $.75.

HURLBUT, S. A. and ALLEN, B. M., *A Latin Vocabulary for First and Second Years,* and *A Latin Vocabulary for Third and Fourth Years* (Both with English meanings). American Book Company, 1928 and 1929. 51 pp. and 48 pp.

PEARSON, H. C., LAWRENCE, LILLIE M., and RAYNOR, NINA F., *Latin I.* New York, American Book Company, 1929. Pp. XXVII +526.

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Unprejudiced in its point of view, written in a clear, readable style, this text focuses on the minimum essentials of American history. Training for citizenship is furthered by an emphasis of social and economic history and the importance of world problems. Orientation paragraphs, ample questions and reference material, and good maps and illustrations assist both teacher and pupil.

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First Year Latin: FOSTER AND ARMS
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